

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A line drawing image generating device for generating line drawing data of a plurality of pixels based on original image data of another plurality of pixels, comprising:

ink line ~~area-pixel~~ detecting mechanism for detecting ~~an area-pixels~~ whose each having a brightness is smaller than a predetermined value in an original image, as an ink line areapixels;

neighboring ~~area-pixel~~ detecting mechanism for detecting a neighboring ~~area-pixels~~ of the ink line ~~areapixels~~, which ~~surrounds~~ surround the ink line ~~areapixels~~;

outline extraction process target limitation mechanism for performing an outline extraction process for entire pixels of the original image except the ink line pixels and the neighboring pixels thereof;

outline ~~area-pixel~~ detecting mechanism for detecting ~~an outline portion pixels of an image as an outline area, with respect to an area other than the ink line area and the neighboring area in the original image, by performing an the outline extraction process for the entire area-pixels of the original image except the ink line area-pixels and the neighboring area-pixels thereof to prevent the ink line area from becoming thickened in a line drawing image obtained from the outline extraction process;~~

line drawing data storing mechanism for storing the line drawing data; and
color data writing mechanism for writing color data to a storage area of the
line drawing data storing mechanism, which corresponds to the ink line ~~area-pixels~~
and the outline ~~areapixels~~, and writing different color data to another storage area
of the line drawing data storing mechanism, which corresponds to ~~an area-pixels~~
other than the ink line ~~area-pixels~~ and the outline ~~areapixels~~.

2. (currently amended) The line drawing image generating
device according to claim 1, wherein
the original image contains a plurality of pixels, and
when the ink line ~~area-is-pixels are~~ are included in a predetermined ~~area-pixels~~
surrounding a pixel to be processed in the original image, and the pixel to be
processed is not included in the ink line ~~areapixels~~, the neighboring ~~area-pixel~~
detecting mechanism detects the pixel to be processed as ~~the a~~ neighboring
~~areapixel~~.

3. (currently amended) The line drawing image generating
device according to claim 1, wherein the ink line ~~area-pixel~~ detecting mechanism
detects, as the ink line ~~areapixels~~, a portion of ~~an area-pixels~~ where brightness is
smaller than a predetermined value, such that the portion of the pixels lies near ~~the~~
an outline of the ~~areapixels~~.

FUJITA

Application No. 10/693,954

May 8, 2006

4. (currently amended) The line drawing image generating device according to claim 3, wherein

the original image contains a plurality of pixels, and

when ~~an area-a~~ a pixel other than the ink line ~~area-pixel~~ is included in a predetermined ~~area-pixels~~ surrounding a pixel to be processed included in ~~an area~~ pixels whose brightness is smaller than a predetermined value, the ink line ~~area pixel~~ detecting mechanism detects the pixel to be processed as ~~the-an~~ an ink line ~~areapixel~~.

5. (previously presented) The line drawing image generating device according to claim 1, further comprising still image data extracting mechanism for extracting arbitrary still image data from moving image data, wherein

the line drawing data is generated using the still image data, which is extracted by the still image data extracting mechanism, as the original image data.

6. (currently amended) A computer readable storage medium storing a line drawing image generating program for generating line drawing data based on original image data, wherein the line drawing image generating program causes a computer to execute steps of:

detecting ~~an area-pixels~~ each of whose brightness is smaller than a predetermined value in an original image as ~~an ink line areapixels~~;

FUJITA

Application No. 10/693,954

May 8, 2006

detecting ~~a-neighboring area-pixels~~ of the ink line ~~areapixels~~, which surrounds the ink line ~~areapixels~~;

performing an outline extraction process for entire pixels of the original image except the ink line pixels and the neighboring pixels thereof;

detecting ~~an-outline portion-pixels~~ of an image as ~~an-outline area with respect to an area other than the ink line area and the neighboring area in the original image-pixels~~ by performing ~~an-the~~ outline extraction process for the entire ~~area-pixels~~ of the original image except the ink line ~~area-pixels~~ and the neighboring ~~area-pixels~~ thereof to ~~prevent the ink line area from becoming thickened in a line drawing image obtained from the outline extraction process;~~ and

writing color data to a storage area of a line drawing data storing memory for storing the line drawing data, which corresponds to the ink line ~~area-pixels~~ and the outline ~~areapixels~~, and writing different color data to another storage area of the line drawing data storing memory, which corresponds to ~~an-area-pixels~~ other than the ink line ~~area-pixels~~ and the outline ~~areapixels~~.

7. (currently amended) The storage medium according to claim 6, wherein the original image contains a plurality of pixels, and when the ink line ~~area-is-pixels are~~ included in a-predetermined ~~area-pixels~~ surrounding a pixel to be processed in the original image and the pixel to be processed is not included in the ink line ~~areapixels~~, the line drawing image generating program causes the

FUJITA

Application No. 10/693,954

May 8, 2006

computer to detect the pixel to be processed as ~~the~~ a neighboring area-pixel in the step of detecting the neighboring ~~area~~pixels.

8. (currently amended) The storage medium according to claim 6, wherein the step of detecting the ink line ~~area~~pixels, detects, as the ink line ~~area~~pixels, a portion of ~~an area-pixels~~ where brightness is smaller than a predetermined value, such that the portion of pixels lies near ~~the~~ an outline of the ~~area~~pixels.

9. (currently amended) The storage medium according to claim 8, wherein the original image contains a plurality of pixels, and when ~~an area-a pixel~~ other than the ink line ~~area-pixel~~ is included in a predetermined ~~area-pixels~~ surrounding a pixel to be processed included in ~~an area-pixels~~ whose brightness is smaller than a predetermined value, the line drawing image generating program causes the computer to detect the pixel to be processed as ~~the~~ an ink line ~~area-pixel~~ in the step of detecting the ink line ~~area~~pixels.

10. (previously presented) The storage medium according to claim 6 wherein the line drawing image generating program further causes the computer to execute a still image data extracting step of extracting arbitrary still image data from moving image data, and

the line drawing image generating program causes the computer to generate

the line drawing data using the still image data, which is extracted by the still image data extracting step, as the original image data.

11. (currently amended) A line drawing image generating method for generating line drawing data based on original image data, the method comprising:

detecting ~~an area~~ pixels each of whose brightness is smaller than a predetermined value in an original image, as ~~an ink line area~~ pixels;

detecting a ~~neighboring pixels area~~ of the ink line ~~area~~ pixels, which surrounds the ink line ~~area~~ pixels;

performing an outline extraction process for entire pixels of the original image except the ink line pixels and the neighboring pixels thereof;

detecting ~~an outline portion~~ pixels of an image as ~~an outline pixels area~~ with respect to ~~an area other than the ink line area and the neighboring area in the original image~~ by performing ~~an~~ the outline extraction process for the entire ~~area pixels~~ of the original image except the ink line ~~area~~ pixels and the neighboring ~~area pixels~~ thereof to ~~prevent the ink line area from becoming thickened in a line drawing image obtained from the outline extraction process;~~ and

writing color data to a storage area of a line drawing data storing memory for storing the line drawing data, which corresponds to the ink line ~~area~~ pixels and the outline ~~area~~ pixels, and writing different color data to another storage area of the line drawing data storing memory, which corresponds to ~~an area~~ pixels other

FUJITA

Application No. 10/693,954

May 8, 2006

than the ink line ~~area-pixels~~ and the outline ~~areapixels~~.

12. (currently amended) A computer readable storage medium storing a line drawing image generating program for generating line drawing data based on an original image, wherein the line drawing image generating program causes a computer to execute:

detecting ~~an~~ ink line ~~area-pixels~~ of the original image, the ink line ~~area pixels each~~ having a brightness which is smaller than a predetermined value;

detecting a neighboring ~~area-pixels~~ of the original image, the neighboring ~~area-pixels~~ neighboring the ink line ~~areapixels~~;

performing an outline extraction process for entire pixels of the original image except the ink line pixels and the neighboring pixels thereof;

detecting ~~an~~ outline ~~area-pixels~~ of the original image, the outline ~~area-pixels~~ being outside of the ink line ~~area-pixels~~ and the neighboring ~~area-pixels~~ and having a brightness which differs from ~~an area-pixels~~ adjacent to the outline ~~areapixels~~, by performing ~~an~~ the outline extraction process for the entire ~~area-pixels~~ of the original image except the ink line ~~area-pixels~~ and the neighboring ~~area-pixels~~ thereof ~~to prevent the ink line area from becoming thickened in a line drawing image obtained from the outline extraction process;~~

assigning data corresponding to a first color to both the ink line ~~area-pixels~~ and the outline ~~areapixels~~; and

assigning data corresponding to a second color, different than the first color, to at least the neighboring ~~area~~pixels.

13. (currently amended) The storage medium of claim 12, wherein the program further causes the computer to re-assign data of an interior portion of an area formed by the ink line area-pixels so that the data of the interior portion of the area formed by the ink line area-pixels corresponds to another ~~the~~ second-color ~~rather~~-different than the first color.

14. (previously presented) The storage medium of claim 12, wherein the program further causes the computer to obtain the original image by extracting a still image from a moving image.

15. (currently amended) The storage medium of claim 12, wherein in addition to the neighboring ~~area~~pixels, all other ~~areas~~-pixels of the original image outside of the ink line ~~area~~-pixels and the outline ~~area~~-pixels are assigned data corresponding to the second color.

16. (currently amended) A method of generating line drawing data based on original image data, the method comprising:

FUJITA

Application No. 10/693,954

May 8, 2006

detecting pixels of an ink line area of the original image data, the ink line area pixels having respective brightnesses which are smaller than a predetermined value;

detecting pixels of a neighboring area of the original image data, the neighboring area pixels neighboring the ink line area pixels;

performing an outline extraction process for an entire area represented by the original image data except the ink line area and the neighboring area thereof;

detecting pixels of an outline area of the original image data, the outline area being outside of the ink line area and the neighboring area, by performing ~~an~~ the outline extraction process for the entire area represented by the original image data except the ink line area and the neighboring area thereof, the outline area pixels each having a brightness which differ from that of pixels adjacent to the outline area pixels; ~~to~~

preventing the ink line area from becoming thickened in a line drawing image obtained from the outline extraction process by performing the outline extraction process for the entire area represented by the original image data except the ink line area and the neighboring area thereof, ~~and the outline area pixels having respective brightnesses which differ from pixels adjacent to the outline area pixels;~~

assigning data corresponding to a first color to both the ink line area pixels and the outline area pixels; and

assigning data corresponding to a second color, different than the first color, to at least the neighboring area pixels.

17. (currently amended) The method of claim 16, wherein the method further comprising re-assigning data of an interior portion of the ink line area so that the data assigned to the ink line area pixels of the interior portion of the ink line area corresponds to ~~the second~~ another color ~~rather than different from~~ the first color.

18. (previously presented) The method of claim 16, wherein the method further comprises obtaining the original image data by extracting still image data from moving image data.

19. (previously presented) The method claim 16, wherein in addition to the neighboring area pixels, all other pixels of the original image data outside of the ink area and the outline area are assigned data corresponding to the second color.

20. (canceled)

21. (new) The line drawing image generating device according to claim 1, wherein the outline extraction process is performed using a Sobel operator.

22. (new) The storage medium according to claim 6, wherein the outline extraction process is performed using a Sobel operator.

23. (new) The method according to claim 11, wherein the outline extraction process is performed using a Sobel operator.

24. (new) The storage medium according to claim 12, wherein the outline extraction process is performed using a Sobel operator.

25. (new) The method according to claim 16, wherein the outline extraction process is performed using a Sobel operator.

26. (new) The line drawing image generating device according to claim 1, further comprising preventing an ink line area formed by the ink line pixels from becoming thickened in a line drawing image by performing the outline extraction process for the entire pixels of the original image except the ink line pixels and the neighboring pixels thereof.

27. (new) The storage medium according to claim 6, wherein the line drawing image generating program causes the computer to execute the further step of:

preventing an ink line area formed by the ink line pixels from becoming thickened in a line drawing image by performing the outline extraction process for the entire pixels of the original image except the ink line pixels and the neighboring pixels thereof.

28. (new) The method according to claim 11, further comprising preventing an ink line area formed by the ink line pixels from becoming thickened in a line drawing image by performing the outline extraction process for the entire pixels of the original image except the ink line pixels and the neighboring pixels thereof.

29. (new) The storage medium according to claim 12, wherein the line drawing image generating program causes the computer to execute:

preventing an ink line area formed by the ink line pixels from becoming thickened in a line drawing image by performing the outline extraction process for the entire pixels of the original image except the ink line pixels and the neighboring pixels thereof.

30. (new) The line drawing image generating device according to claim 1, wherein the color data writing mechanism for writing color data to the storage data of the line drawing data storing mechanism, which corresponds to the ink line

pixels and the outline pixels, re-writes data of ink line pixels which form an interior portion of an area formed by the ink line pixels to differ color data.

31. (new) The storage medium according to claim 6, further comprising re-writing color data to the storage area of the line drawing data storing memory for storing the line drawing data, which corresponds to the ink line pixels and the outline pixels, so that data corresponding to an interior portion of an area formed by the ink line pixels is rewritten to different color data.

32. (new) The method according to claim 11, further comprising re-writing color data to the storage area of the line drawing data storing memory for storing the line drawing data, which corresponds to the ink line pixels and the outline pixels, so that data corresponding to an interior portion of an area formed by the ink line pixels is rewritten to different color data.